REMARKS

Claims 1-20 are currently pending in the application. Claims 1-13 are presently under consideration. Claims 14-20 are presently withdrawn from consideration; however, applicants' representative intends to rejoin these non-elected claims upon allowance of the device/system claims currently under consideration. Claims 1 and 13 have been amended herein for purposes of clarity. A listing of all pending claims is found on pages 2-6 of this Reply.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Rejection of Claims 1, 5 - 9, and 11 - 13 Under 35 U.S.C. §103(a)

Claims 1, 5 - 9 and 11 - 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kitano *et al.* (U.S. Patent No. 6,371,667) in view of Tateyama *et al.* (U.S. Patent No. 5,965,200). It is respectfully submitted that this rejection should be withdrawn for at least the following reasons. Neither Kitano *et al.* nor Tateyama *et al.*, alone or in combination, teach or suggest applicants' claimed invention, let alone there being no motivation to combine the references as suggested other than *via* employment of applicants' specification as a 20/20 hindsight-based roadmap to achieve the purported combination.

> To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) *must teach or suggest all the claim limitations.* *See* MPEP §706.02(j). The *teaching or suggestion to make the claimed combination* and the reasonable expectation of success *must be found in the prior art and not based on the Applicant's disclosure.* *See In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir.

> 1991). An examiner cannot establish obviousness by locating references which describe various aspects of a patent applicant's invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done. *Ex parte Levengod*, 28 USPQ2d 1300 (P.T.O.B.A.&I. 1993).

Independent claim 1 has been amended herein to recite, "*in the second position the nozzle is positioned to dummy-dispense liquid from the reservoir into the return line to provide a constant flow of liquid through the nozzle to mitigate residual occlusion accrual in the nozzle*." Independent claim 13 has been amended to set forth similar aspects. Support for the subject amendments can be found at, for example, page 4, lines 13-27, and independent claim 14. Thus, applicants' claimed invention provides for a novel system and/or methodology for mitigating waste of resist *as well as* occlusion of dispense nozzles. Additionally, the subject claims set forth the aspect of dispensing resist liquid *directly into a return line* to recycle resist material directly to the resist reservoir when resist material is not being applied to a substrate. In this manner, resist material can continuously flow through a nozzle *and* can be recycled when not directed onto the substrate in order to mitigate waste of the resist material and nozzle occlusion due to fast-drying resist material(s). Neither Kitano *et al.* nor Tateyama *et al.*, alone or in combination, teach or suggest such features of applicants' claimed invention.

In particular, Kitano *et al.* pertains to a filming method and a film forming apparatus for decreasing the amount of processing solution utilized, thereby eliminating waste and forming a uniform processing solution film on a substrate. Kitano *et al.* discloses a catch member to catch resist solution discharged from a resist solution nozzle. However, the catch member as disclosed in Kitano *et al.* is not in fluid communication with any storage means to contain the discharged resist solution. This implies that Kitano *et al.*'s catch member is merely a prophylactic device to prevent discharge of resist solution while the resist solution nozzle is located and centered above the substrate. The recycling of the resist solution in Kitano *et al.* therefore is neither contemplated nor put at a premium. Additionally, Kitano *et al.* goes so far as to discusses the *undesirability* of continuous resist flow. For example, "...when the diameter [of the nozzle] is more than 500 μm, the *resist solution drips from the resist solution discharge nozzle, which makes*

control of the flow rate impossible." (Column 6, lines 2-5.) Thus, Kitano *et al.* discusses the importance of limiting the nozzle diameter depending on the viscosity of the particular resist being dispensed *in order to avoid continuous flow.* In this sense, Kitano *et al.* actually teaches away from continuous resist flow. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)

The subject invention on the other hand, is not directed towards *only* capturing resist *per se*, but is also directed towards utilizing a continuous flow of resist – ***dummy-dispensed resist*** – to prevent drying and formation of resist residues on the dispense head, and consequently returning such dummy-dispensed resist to the system, *via* a storage means, thereby ameliorating wastage of resist.

It is readily apparent that the catch mechanism disclosed in Kitano *et al.*, is not intended to (nor contemplates or suggests) address the issue of capturing dummy-dispensed resist and subsequently returning the aforementioned dummy-dispensed resist to a storage means in order to ***prevent the resist from drying and forming residues on the dispense head,*** which would in consequence ***occlude the dispense head orifices***, and which would in turn affect the ***amount and pattern by which resist is subsequently dispensed from the dispense head*** in the future.

The Examiner relies on Tateyama *et al.* to show immediate recycling of a surplus coating solution. Tateyama *et al.* provides a processing method and processing apparatus that can readily recover a processing liquid used to process an object and can ensure the readiness with which the processing liquid is recycled. In particular, Tateyama *et al.* utilizes a suction nozzle connected to a liquid recycle processing mechanism to recover liquid used during processing. However, Tateyama *et al.*, like Kitano *et al.*, is neither directed towards prevention of the formation of resist residues on the dispense head, nor does Tateyama *et al.* address the issue of occluded dispense head orifices caused by resist drying on the dispense head. Thus, while Tateyama *et al.* may be concerned with the recovery and recirculation of excess liquid used during processing, which would otherwise be wasted, the methods elucidated by Tateyama *et al.*, *viz.*, air ejected from a compressed air source to provide a vacuum, vacuum pumps, and a motor and an aspirator

(*See* Tateyama *et al.*, column 5, lines 55-64), would have a considerable desiccant, and consequently deleterious, effect on ***fast drying resist*** solutions contemplated in the subject invention. Tateyama *et al.* does not teach or suggest directly dispensing resist fluid into a return tube, which in effect closes the loop to the resist reservoir, but rather requires a second nozzle—a sucking nozzle—to remove excess fluid from a surface.

> It is essential to consider all elements of the claimed invention; it is impermissible to compare the prior art with what the viewer interprets the "gist" of the invention to be *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 19 USPQ2d 1111 (Fed. Cir. 1991); *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 221 USPQ 669 (Fed. Cir. 1984); *Jones v. Hardy*, 727 F.2d 1524, 1527-28, 220 USPQ 1021m 1024 (Fed. Cir. 1984).

Tateyama *et al.*'s approach, rather than aiding in the collection of fast drying resists, *would instead hinder such collection and recirculation by expediting the evaporation of the volatile solvent base from the fast drying resist.* Further, by accelerating the evaporation of the volatile solvent base from the resist through the introduction of compressed air sources, vacuum pumps, or motors and aspirators, *Tateyama et al. would expedite the formation and accretion of resist residues on the dispense head*, compounding the occlusion of dispense head orifices by accelerating the dissipation and depletion of the vaporized solvent base atmosphere. Clearly Tateyama *et al.*'s technology is not adapted towards collection and recirculation of surplus resist suspended within extremely volatile solvent bases. The subject claimed invention on the other hand, adopts measures to minimize dissipation and depletion of the volatile solvent base atmosphere, crucially, the subject invention attempts to negate, or at the very least, ameliorate formation and accretion of resist residues on the dispense head and the consequent occlusion of dispense head orifices. Therefore, it is readily apparent that Tateyama *et al.*, although discussing a fluid recycling system, cannot be combined to provide a recycling element for use with fast-drying resist fluid.

Clearly then, neither Kitano *et al.* nor Tateyama *et al.*, alone or in combination, teaches or suggests the applicants' claimed invention. Further, given that Kitano *et al.* is concerned with the minimization of wastage with regards to a processing solution and the forming of a uniform processing solution film on a substrate, but yet, does not disclose a

facility to recycle any surplus processing solution that might be generated, and moreover, that Tateyama *et al.* provides a processing method and processing apparatus to recover a processing liquid used to process an object, but discloses a recovery method that is highly impractical with respect to fast drying resists suspended in volatile solvent bases, it is respectfully submitted that there could have been no motivation to impel one ordinarily skilled in the art to combine Kitano *et al.* together with Tateyama *et al.*, to do what the applicants have done.

> The prior art items themselves must suggest the desirability and thus the obviousness of making the combination without the slightest recourse to the teachings of the patent or application. Without such independent suggestion, the prior art is to be considered merely to be inviting unguided and speculative experimentation which is not the standard with which obviousness is determined. *Amgen, Inc. v. Chugai Pharmaceutical Co. Ltd.*, 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991); *In re Laskowski*, 871 F.2d 115, 117, 10 USPQ2d 1397, 1398 (Fed. Cir. 1989); *In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1532 (Fed. Cir. 1988); *Hodosh v. Black Drug*, 786 F.2d at 1143 n.5., 229 USPQ at 187 n.4.; *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1985).

It is, therefore, respectfully submitted that any suggestion otherwise would merely be an endeavor to utilize the applicants' specification as a 20/20 hindsight-based roadmap to achieve the purported combination.

Finally, in view of at least the foregoing, it is respectfully submitted that neither Kitano *et al.* nor Tateyama *et al.*, alone or in combination, teach or suggest applicants' invention as recited in independent claims 1 and 13, and claims 5–9 and 11–12 which depend from claim 1. Accordingly, it is respectfully requested that this rejection be withdrawn.

II. Rejection of Claims 2, 3, and 10 - 12 Under 35 U.S.C. §103(a)

Claim 2, 3 and 10-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kitano *et al.* and Tateyama *et al.* as applied in claim 1 in view of Akimoto *et al.* (U.S. Patent No. 5,938,847). It is respectfully requested that this rejection

be withdrawn for at least the following reasons. Neither Kitano *et al.*, Tateyama *et al.* nor Akimoto *et al.*, alone or in combination, teach or suggest the subject invention, let alone there being no motivation to combine the references as suggested other than *via* employment of applicants' specification as a 20/20 hindsight-based roadmap to achieve the purported combination.

As discussed *supra* with respect to independent claims 1 and 13, neither Kitano *et al.* nor Tateyama *et al.*, alone or in combination make obvious the applicants' invention. Claims 2, 3, 10-12 depend from claim 1. Akimoto *et al.* does not make up for the aforementioned deficiencies of Kitano *et al.* and Tateyama *et al.* This rejection should be withdrawn.

III. Rejection of Claim 4 Under 35 U.S.C. §103(a)

Claim 4 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kitano *et al.* and Tateyama *et al.* as applied in claim 1, in view of Tholome (U.S. Patent No. 4,785,760). It is respectfully submitted that this rejection should be withdrawn for at least the following reasons. As discussed earlier, the teachings of neither Kitano *et al.* nor Tateyama *et al.*, alone or in combination, teach or suggest applicants' invention as recited in claim 1. Tholome *et al.* is insufficient to overcome the deficiencies in obviousness enunciated above in connection with the combination of Kitano *et al.* and Tateyama *et al.*

In view of the foregoing it is respectfully requested that this rejection be withdrawn.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,
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